

# ACANTHUS

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An international newsletter to encourage interest in the Acanthaceae

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## Recent Publication of Interest

HEDRÉN, M. 1989. *Justicia* sect. *Harnieria* (Acanthaceae) in tropical Africa. *Symb. Bot. Upsal.* 29: 1-141.

## Further Comments on the Spelling of Latin Names

On reading the different points of view on the spelling of the Latin name for the Shrimp Plant in Acanthus 3, 1988, I thought of a few similar examples in other taxa. John Tweedie (1775-1862) was a Scottish botanist and gardener who lived in Argentina from 1825, and traveled widely around southern South America collecting plants that were sent to British herbaria. More than 30 species that grow in this area have been dedicated to him (Holmbergia 4: 3-14. 1945), both as substantive epithets (e.g., *Centaurea tweediei* Hook. & Arn., *Hymenoxyt tweediei* Hook. & Arn., *Senecio tweediei* Hook. & Arn.) and as adjectival epithets (e.g., *Polypodium tweedieanum* Hooker, *Eupatorium tweedieanum* Hook. & Arn.). The spelling of these examples agree with Rec. 73.C.1 of ICBN (Reg. Veg. 118: 1-328. 1988) as to the formation of specific epithets by giving Latin terminations to modern personal names. On the contrary, in several Acanthaceae names, such as *Dicliptera tweediana* Nees, *Adhatoda tweediana* Nees, *Blechum tweedii* Nees, and *Ruellia tweediana* Griseb. ex Fernald, the epithets have not been formed just "by adding the genitive inflection ..." (Rec. 73.C.1.a), or "...by adding -an- plus the nominative singular inflection ..." (Rec. 73.C.1.c), but by deletion of the final vowel in Tweedie's name before giving it the Latin terminations to form the epithets. I agree with Dick Brummitt that the forming of epithets suppressing letters of a personal name before giving it a Latin termination can be regarded as in contradiction with Rec. 73.C.1, and therefore, as Art. 73.10 states, as orthographic errors to be corrected. On the other hand, Rec. 73.C.3, although only a recommendation and not an article, also states clearly that the spelling of a personal name should not be modified on forming new epithets based on a person's name. Tom Daniel's example of the generic name *Valantia*, commemorating Vaillant, is only an exception. As Art. 73.7 states, intentional latinizations of personal names by earlier authors are to be preserved, and therefore the stem of "Valantius" (Linnaeus' latinized version of Vaillant) can be used to form the generic name *Valantia*. But Art. 73.7 also states that the use of terminations in contradiction with what is mentioned in Rec. 73.C.1 are not to be preserved. Example 10 of this article shows that the termination in *Zygophyllum billardieri* DC., based on the latinization of the name Billardière as "Billardierius" and put into genitive form, is not acceptable under Art. 73.10, and therefore the name is correctly spelled *Z. billardierei*. I therefore think that the correct way of spelling the Acanthaceae names are *Dicliptera tweedieana*, *Adhatoda tweedieana*, *Blechum tweediei*, *Ruellia tweedieana* and *Justicia brandegeana* Wassh. & Smith.

-Cecilia Ezcurra

## Against Separating Mendonciaceae from Acanthaceae

Since Bremekamp (Proc. Koninkl. Nederl. Akad. Wetensch. Amsterdam, C 56: 533-546. 1953) first described Mendonciaceae, recognition of this family has received varying support. The character of the fruit of *Mendoncia*, which is a single-seeded fleshy drupe, does indeed seem extraordinary in the Acanthaceae, which is relatively uniform in its very characteristic dry dehiscent 2- to several-seeded fruit. This makes it very tempting

to recognise Mendonciaceae, and even to suggest that it may have little relationship with Acanthaceae at all. In recent years such influential authors as Cronquist (*An Integrated System of Classification of Flowering Plants*. 1981) and Takhtajan (*Sistema Magnoliofitov*. 1987) have recognised the family, and in personal communication with specialists in Acanthaceae I have detected an increasing willingness to follow suit. I was indeed almost seduced into such a course myself until my attention was drawn to the genus *Pseudocalyx* by my colleague Kaj Vollesen. The present note is not intended as a definitive discussion of the technical arguments, which must await more detailed research, but is a warning against placing too much emphasis on the character of the fruit.

Probably the first author to take *Mendoncia* out of Acanthaceae was van Tieghem (Ann. Sci. Nat., IX 7: 1-24. 1908) whose detailed study of the gynoecium led him to recognise a family Thunbergiacées which included the Thunbergioideae, Mendoncioideae, and Nelsonioideae of other authors. But because he gave the family name only in its French form and not Latin, he did not validate the name Thunbergiaceae. This was apparently first published by Bremekamp (op. cit.) alongside his new family Mendonciaceae. In a later paper Bremekamp (Bull. Bot. Surv. India 7: 21-30. 1965) maintained his position in recognising the segregate families.

In successive editions of *Willis's Dictionary*, Airy Shaw (1966, 1973) recognised both Mendonciaceae with two genera, *Mendoncia* and *Gilletiella*, and Thunbergiaceae with four genera, *Thunbergia*, *Meyenia*, *Pseudocalyx*, and *Pounguia*. Thorne (Evol. Biol. 9: 35-106. 1976), however, sank both into Acanthaceae, and later (Nordic J. Bot. 3: 85-117. 1983) maintained Mendoncioideae as only a subfamily. Interestingly, Dahlgren (Bot. J. Linn. Soc. 80: 91-124. 1980) at first recognised both of these segregate families, but later (Nordic J. Bot. 3: 119-149. 1983) sank them again without comment. Conversely, Takhtajan (Bot. Rev. 46: 225-359. 1980) at first included both in Acanthaceae (giving Mendonciaceae with a question mark, Thunbergiaceae without), but later (1987, op. cit.) accepted both families with the same constituent genera as Airy Shaw. Cronquist (op. cit.), accepting Mendonciaceae but not Thunbergiaceae, placed it between Bignoniacae and Lentibulariaceae, commenting (p. 972), "Traditionally the Mendonciaceae have been included in the Acanthaceae, but they lack both the cystoliths and the specialized mechanism of seed-dispersal which characterize that family." But while most of those publishing family systems for the whole of the flowering plants have thus tended at one time or another to accept these segregates, most specialists in the Acanthaceae have usually not accepted either of Bremekamp's splits (e.g., Leonard in Contr. U.S. Natl. Herb. 31: 323-781. 1958; Heine in Fl. Gabon 13: 1-250. 1966; Benoist in Fl. Madagascar & Comores, fam. 182: 1-230. 1967; Wasshausen and Smith in Fl. Ilustr. Catarin., Acant.: 1-134. 1969; Durkee in Ann. Missouri Bot. Gard. 65: 155-283. 1978; Barker in J. Adelaide Bot. Gard. 9: 1-286. 1986). The comment by Balkwill & Getliffe Norris (Monogr. Syst. Bot. Missouri Bot. Gard. 25: 503-516. 1988) that Thunbergiaceae has received general acceptance seems a little wide of the mark.

The key to the problem seems to lie not in the New World, where *Mendoncia* is well-known and most of its c. 60 species occur, but in Africa, where *Mendoncia* is thinly represented but other genera, mostly rather poorly known, occur. The genus given as *Gilletiella* (one species in west-central tropical Africa) by Airy Shaw and Takhtajan has a fleshy fruit as in *Mendoncia*, but it has two pyrenes instead of one. To some extent, it thus helps to bridge the gap between *Mendoncia* and *Thunbergia*. The genera *Monachochlamys* and *Afromendoncia* were conclusively sunk into *Mendoncia* by Benoist (Not. Syst. (Paris) 11: 137-151. 1944).

But the interesting genus is *Pseudocalyx* with perhaps 4 species in tropical Africa and Madagascar. This has a habit, inflorescence and general "gestalt" very like that of many New World *Mendoncia* species, and even has the same rusty brown colour of the indumentum (as commented upon even by Bremekamp himself in 1955, op. cit.), but it has a dry dehiscent fruit as in *Thunbergia*. The indumentum of *Pseudocalyx* is short and dense and made up of stellate hairs, unlike the long straight hairs of most *Mendoncia* species. However, two species of *Mendoncia* from West Africa, *M. iodoides* (S. Moore) Heine and *M. combretoides* (A. Chev.) R. Benoist, have the long straight hairs and also a short indumentum of bi- or tri-fid hairs approaching those of *Pseudocalyx*. The similarity of the two genera is so strong that it seems impossible to place them in separate families, despite the difference in fruit.

*Meyenia* is a monotypic genus from India, formerly included in *Thunbergia*, for example by Clarke (*Flora of British India* 4: 387-558. 1884), but with peculiar pollen (Raj in Grana Palynol. 3: 3-108. 1961) and other characters as discussed by Bremekamp (1955, op. cit.). The fourth genus listed in Thunbergiaceae by both Airy Shaw and Takhtajan is *Pounguia* Benoist, but this is apparently incorrect. Benoist (Bull. Bot. Soc. France 85: 678-686. 1938) likened the genus to *Mendoncia* and *Thunbergia*, and it has broad bracteoles superficially similar to these, but Bremekamp (1955, op. cit) disputed this and referred it to the tribe Whitfieldieae in the main body of Acanthaceae. Heine (op. cit.) has sunk it into *Whitfieldia* itself, even though Raj (op. cit.) has said that the pollen is very different. When the experts cannot agree in which of two groups to place a

species, it hardly argues for making them separate families.

I have little doubt that *Mendoncia*, *Anomacanthus* (including *Gilletiella* De Wild. & Durand), *Pseudocalyx*, *Thunbergia*, and *Meyenia* form a natural group, held together by a strong tendency to a climbing habit, a similar inflorescence, much enlarged bracteoles, and a correspondingly reduced calyx. Bremekamp (1953, op. cit.) quoted other similarities such as the presence of "raphidines" in the phloem, but, as was his usual inclination, preferred to emphasise differences rather than similarities. The absence of cystoliths, commented on for Mendonciaceae by Cronquist (op. cit.), applies also not only to *Thunbergia*, but also to the tribe Acantheae. At least until a more detailed study is undertaken, I would prefer to keep these five genera together as a group within the Acanthaceae. Perhaps a compromise solution would be to place them in a subfamily, Thunbergioideae, and within this distinguish the two drupaceous genera as tribe Mendoncieae.

We should remember that fleshy indehiscent fruits have developed in other gamopetalous families such as Scrophulariaceae (*Halleria*), Bignoniaceae (*Colea*), Solanaceae (*Solanum*), Gesneriaceae (*Columnnea*), Boraginaceae (*Tournefortia*), Convolvulaceae (*Erycibe*), Gentianaceae (*Tripterospermum*), Buddlejaceae (*Buddleja* spp.), Apocynaceae (*Carissa*), Labiateae (*Hoslundia*), and Compositae (*Chrysanthemoides*), and too much emphasis should not be placed on this one character. An adaptation to a different seed dispersal mechanism by development of a fleshy fruit wall is no big deal in family-level systematics, especially when the affinities of the genera concerned are obvious. In his review of the group in Africa, Benoist (1944, op. cit.) recognised no subfamilies and placed *Mendoncia*, *Gilletiella*, *Thunbergia*, and *Pseudocalyx* in one tribe, Thunbergiées. And even without knowing the two connecting genera, Bentham and Hooker (*Genera Plantarum* 2: 1060-1122. 1876) placed *Mendoncia* and *Thunbergia* together in one tribe over a hundred years ago. Perhaps they had it about right.

Postscript: Literally half an hour after I submitted the above to our editor, my eye lit on the reference in Acanthus 3 to the important paper by Carlquist and Zona (Aiso 12: 201-227. 1988) which I had somehow overlooked. It is gratifying that these authors similarly conclude that *Mendoncia* and *Thunbergia* are closely related and should not be excluded from Acanthaceae. They write (p. 222), "With such a constellation of unusual features linking the two genera, segregation of *Mendoncia* from Acanthaceae seems inadvisable unless *Thunbergia* is also excluded... However, wood of two species of *Thunbergia*, *T. erecta* and *T. holstii*, does not share the features cited for *Mendoncia* but is, instead, compatible with the wood of remaining Acanthaceae. Thus, segregation of *Thunbergia* from Acanthaceae is not supported here." It would be interesting to know how *Pseudocalyx* and *Anomacanthus* compare in these critical characters.

-R.K. Brummitt

#### Generic Status of *Siphonoglossa* Relative to *Justicia*

The trend of combining smaller genera of Justicieae, Justiciinae into *Justicia* has recently culminated with Graham's treatment of the genus (Kew Bull. 43: 551-624. 1988) as reviewed in Acanthus 4. Prior to Graham's work, Stearn (J. Arnold Arbor. 52: 614-647. 1971) among others, stated that until all taxa of Justicieae could be adequately studied and correlations between various characters made that a broad interpretation of *Justicia* was probably best. Graham's attempt to develop this view through sampling many taxa of Justicieae is indeed admirable, but the reality of taking into account, in one study, the full scope of variation that is Justicieae falls short with respect to detailed knowledge and understanding of some genera. It appears contrary to me to merge genera with *Justicia* until these genera are themselves fully accorded detailed study on a worldwide basis thus providing a more thorough body of knowledge on which to maintain segregate genera or synthesize them. With the current trend of generic mergers in Justiciinae, the subtribe may soon consist of one large, extremely variable and polyphyletic genus that (as Daniel notes in Acanthus 4) might consume other subtribes such as Odontoneminae and its long-standing genera. Because I do not think that this is necessarily the most desirable outcome, I advocate an approach to generic delimitation in the tribe in which detailed investigations of the smaller segregate genera are performed and monographs of them produced. By studying these genera thoroughly, sets of characters on which to base valid genera may emerge, instead of important systematic information being lost, so that any future classification of *Justicia* can be based on a complete accounting of the facts. Indeed, I oppose the placing of virtually any acanth with a zygomorphic corolla and two stamens into *Justicia* as based in the past on an a priori assessment of anther characters, or as with Graham's work, based on a superficial examination of one or two taxa from genera which may be pivotal to a fuller understanding of Justicieae. Having recently monographed one of these putatively pivotal "segregate"

genera, I will argue against these wholesale generic mergers.

Based on my work in *Siphonoglossa* (Brittonia 31: 373-378. 1979) and summarized in my dissertation (Systematic Studies of the Genus *Siphonoglossa* *sensu lato* (Acanthaceae), Univ. of Texas, Austin. 1983), as well as several recently or soon to be published papers, I have shown that *Siphonoglossa* was divisible into two sections belonging in the Justicieae (and a "subgeneric" category since shown to belong to Odontonemeae) quite disparate in their morphologies. As the details are lengthy, suffice it to say that I have shown using morphological, chemical, chromosomal, and palynological studies that *Siphonoglossa* s. l. was an artificial assemblage of taxa based on a priori weighting of the corolla by Torrey, Lindau, and others. That the genus was perhaps based on convergent corolla morphologies associated with long-tongued insect visitation was also suggested in the 1979 paper. Graham cites neither of these sources stating (p. 603) that, "the possession of a long, cylindrical corolla tube has been the basis for the genus *Siphonoglossa*, but this seems to bring together superficially similar but not very closely related species (probably the result of convergence due to similar pollinators)." In my dissertation I removed four species, those of my sect. *Pentaloba*, with 5-parted calyces and corollas, conspicuously appendaged anther sacs, chromosome numbers based on  $x=14$ , and flavonoid chemistry characterized by flavonol-0-glycosides (all known character states for *Justicia*) to *Justicia*. I therefore previously stated that *Siphonoglossa* s. l. as based on corolla morphology was artificial and that this character alone was invalid for generic classification of this heterogeneous assemblage. Overall, I find that other problems with Graham's treatment are due in part to her examination of only two species of *Siphonoglossa* (neither accorded detailed study) and her acceptance of *Chaetothylax* as being composed of presumably closely related species. These problems (not elaborated upon here) include: 1) Her sect. *Chaetothylax* is circumscribed in part by having simple spikes, but *S. canbyi* and *S. buchii* have paniculate inflorescences; 2) Graham states that the, "reduction of one calyx segment or its complete absence is quite a common feature in the genus and has a strong systematic correlation." Why not then utilize these uncommon correlated characters for generic-level classification? 3) Regarding the androecium, there are several problems relating to Graham's interpretations of anther appendages, anther sacs appearing blunt or rounded at the base, and the lower theca placement on the filament; 4) There are too many exceptions in her pollen types to make them valid with regard to sects. *Dianthera* and *Chaetothylax* (see Hilsenbeck in Amer. J. Bot. 77: 27-40. 1990); 5) Seed types, while perhaps her best contribution, cut across sectional and generic lines as well. Indeed, only two of seven species of *Siphonoglossa* "key" to sect. *Chaetothylax*, two others key to sect. *Sarotheca*, and the others key to sect. *Dianthera*. Because *Siphonoglossa* s. s. is a very coherent group of taxa all with a very homogeneous morphology, chromosome number based on  $x=11$ , flavonoid chemistry characterized by the exclusive elaboration of apigenin based C-glycosylflavones, the production of cleistogamous flowers, and a uniform pollen profile, I think that at least with regard to *Siphonoglossa*, Graham's treatment has many inaccuracies and that her subjugation of it within *Justicia* is premature and not based on a rigorous inventory of the data.

Once a natural group has been defined in Justicieae it comes down to three basic questions: 1) At which level or rank does one choose to recognize the taxa; 2) what are the historical trends, concepts, and constraints in the family; 3) what amount of systematic insight is gained or lost by the choice of one rank over another? As Cronquist (*The Evolution and Classification of Flowering Plants*. 1968, pp. 30-31) notes, "it is perfectly clear that natural, recognizable groups of species, and groups of groups, exist. The ranks at which these groups should be received are not inherent in the nature of the group, but depend on subjective, individual judgment...the criteria...come down to a personal evaluation of the importance of the differences and the size and coherence of the group, in the context of the system as a whole...A good operating principle is to maintain the existing classification whenever it can be defended on natural grounds, and to avoid changing the rank of groups if no significant change in the concept of their relationship to each other and to the other groups is involved." Although Graham's work is both vast and commendable in its scope and aim, I do not honestly think that her superficial examination of *Siphonoglossa* constitutes a more profound knowledge of this group. After all of the 420 or more species of *Justicia* and those of closely related genera are as thoroughly studied as *Siphonoglossa*, including chemistry and cytology, it may be that the most sound systematic approach will be to align natural groups at the subgeneric and sectional levels within a justifiably enlarged concept of *Justicia*. But until that time, I think that *Siphonoglossa* s. s. should not be among those genera "lumped" into *Justicia*.

-R.A. Hilsenbeck